

Significance and Relevance of Information Science in German-language Countries

A Panel Discussion Devoted to the 65th Birthday of Wolf Rauch

Wolf Rauch¹, Rainer Kuhlen², Wolfgang G. Stock³, Christian Wolff⁴, Christa Womser-Hacker⁵, Christian Schlögl¹

University of Graz, Austria
wolf.rauch@uni-graz.at

University of Konstanz, Germany
Rainer.Kuhlen@uni-konstanz.de

Heinrich Heine University Düsseldorf, Germany
stock@phil.hhu.de

University of Regensburg, Germany
christian.wolff@uni-regensburg.de

University of Hildesheim, Germany
womser@uni-hildesheim.de

Keywords: information science; German-language countries; review; importance

1 Introduction

30 years ago, in his inaugural address on the occasion of the foundation of the Institute of Information Science at the University of Graz, Wolf Rauch

In: M. Gäde/V. Trkulja/V. Petras (Eds.): Everything Changes, Everything Stays the Same? Understanding Information Spaces. Proceedings of the 15th International Symposium of Information Science (ISI 2017), Berlin, 13th–15th March 2017. Glückstadt: Verlag Werner Hülsbusch, pp. 252–263.

talked about significance and research topics of information science (Rauch, 1988). Two key statements, among others, were:

- Information science is at least as important as computer science (ibid.: 6).
- In the U.S. and in England information science is a small but well established discipline. This is in contrast to German-language countries, where it was much difficult for information science to gain ground (ibid.: 14 f.).

While the first statement was probably a little bit provocative, the second one was based on a realistic assessment of the status of academic information science at that time.

On the occasion of the 65th birthday of Wolf Rauch, the panel aims at performing a critical review of the actual situation of information science. In particular, the following questions will be discussed in more detail:

1. How is the actual role of information science in German-language countries?
2. What are possible reasons for the changed role of information science today? Did the research topics of information science considerably change in the last decades? Are there still research topics which can be primarily attributed to information science nowadays?
3. What can information science in German-language countries do to increase its role in the future?

2 Statements by panelists

2.1 Statements by Wolf Rauch

Question 1

Information science is the big success story of our time. The topic of information science (impact of computer and telecommunication in society, economy and science) is nowadays the most important development in all parts of the world. The science and technology behind this development, like information retrieval, language processing, artificial intelligence, data mining etc. are core elements of information science.

However, this development is concentrated in the USA and Asia, not in Europe, not in the German speaking countries. And it is mainly focused in private companies (Google, Apple, Amazon, etc.) not at universities.

Therefore it is no surprise that information science as a scientific discipline plays, in the German speaking countries, a minor role in science and economy.

Question 2

As already mentioned above, it is the enormous economic and social impact of information and communication technology which makes information science so important. Information science is the driving force behind this development, focusing on the traditional research topics of information science, like information retrieval, data mining, man-machine interface, artificial intelligence etc. This development is driven by the private sector.

In the public sector, security questions like cybercrime, cyberwar and the protection of critical infrastructure are in the center of interest. Here intelligence agencies of the military and the police are the driving forces, private security companies gain importance. Again universities play a minor role.

Question 3

What is missing in the new development is the consideration of the civil society. Privacy, information ethics, intellectual property; the role of the citizen versus private companies and governments; the long-term, unintended and indirect effects of an information society (information assessment); democracy is in danger, “Big Brother” and the “Transparent Citizen” are already reality.

These topics should be in the center for information science in Europe, mainly in the German speaking countries. This discipline of science is not in the focus of private companies, and only of marginal importance for the public security sector. Here although information science has a long tradition at European universities. In these questions Europe is more alert than the USA or the Asian countries. Let's concentrate on this niche which will be a key element for the development of future information societies.

2.2. Statements by Wolfgang G. Stock

Core topics and current enhancements of information science (question 2)

There is no doubt on the core topics of information science. It is the scientific discipline which describes and analyzes the pragmatics and dynamics of information (Rauch, 1994, 2004). In contrast to data, which are the objects of computer science, information science deals with knowledge and – while transmitting knowledge – information. For Kuhlen (1990: 14), information is “knowledge in action” and so it is always dynamic. “Information is operative action-relevant knowledge”, Rauch (1988: 26) correctly states. Henrichs (2014: 193) defines information science as the science of knowledge organization, more precisely as “the science of the application and utilization of knowledge.” As knowledge can be seen as the content of information, information science is the science of information content (Stock & Stock, 2013: 8). Its core sub-disciplines (Stock & Stock, 2012) include knowledge representation and information retrieval (Stock & Stock, 2013), informetrics, as well as application-oriented subjects such as knowledge management, information literacy, and the information markets (Linde & Stock, 2011). As knowledge and information play outstanding roles in the currently emerging knowledge society, information science is – next to computer science – one of the fundamental sciences of the societies of the 21st century.

With the upcoming knowledge society, new research topics in information science emerged. We would like to introduce some examples. (1) Information systems of all kinds entered the work place and the people’s private lives. It is important to analyze and to evaluate such information systems. It is a task of information science to establish evaluation models and methods which exceed disciplinary boundaries and unite approaches from, e.g., information systems research, business administration and marketing in order to cover all critical aspects of information systems (cf., e.g., Schumann & Stock, 2014). (2) The information behavior of users changed. Some years ago, information science described information search behavior (say, on Web search engines and professional information services). Nowadays, users additionally exhibit information production behavior as posting texts, images and videos on Social Network Services (SNSs) and information reception behavior (reading and reacting to such posts). Social media, e.g. asynchronous SNSs as Facebook (Knautz & Baran, 2016) or synchronous SNSs as YouNow and Periscope (Scheibe, Fietkiewicz & Stock, 2016) form new research topics. Therefore, all kinds of information behavior became object of

information science. (3) In knowledge societies, a new type of cities, namely the so-called “informational” or “smart” city came into reality (Stock, 2011). In cooperation with other disciplines information science plays a central role in “informational urbanism” (Barth et al., 2017), which analyzes prototypical cities of the knowledge society and gives hints to construct new cities (as Songdo in South Korea) or to reconstruct old cities (as, e.g., Vienna, Oulu or Barcelona) in terms of “informativeness” or “smartness.” These three examples impressively demonstrate the significance of information science in the knowledge society.

Decision Delphi: Information science in German-speaking countries or not (questions 1 and 3)

In the German-speaking countries, information science never cleared of the hurdle of the critical mass and carved out a more or less miserable existence as an exotic “Orchideenfach” at the universities in Germany, Austria and Switzerland. According to Henrichs (2014: 214), such a small scientific discipline has no prospects in higher education. As information science institutes in Konstanz and in Saarbrücken are already closed and the Düsseldorf institute is to be shut down in 2022, Henrichs’ prognosis seems to be confirmed. Is there any solution of this unfortunate development?

Decades ago, Rauch (1979) introduced the decision Delphi. In contrast to classical Delphi (forecasting situations) and policy Delphi (analyzing a situation), decision Delphi prepares, assists and makes decisions. With a decision Delphi reality will be created. Precondition is to introduce crucial decision makers into the Delphi study: “In a decision Delphi reality is not predicted or described; it is made” (ibid.: 163). For Rauch, the case study was the system of scientific information and documentation in Austria (Rauch, 1978), for us it would be the system of researching and teaching information science in German-speaking languages. We have to bring together information scientists, policy makers in national parliaments, policy makers in higher education and players on information markets in order to create an information science which the German-speaking countries really need to master the challenges of knowledge society.

2.3 Statements by Christian Wolff

Question 1

The situation of information science in German speaking countries (D-A-CH) is ambivalent in my view: On the one hand, topics in information science have gained importance recently. One might think of digital society as a very broad phenomenon, of usage of information and information systems in everyday life (information behavior), or the general trend towards more explicitness and more measurability in science in general. These topics are typical information science research domains. On the other hand, we observe that topics previously associated with information science are today being occupied by computer science and related fields (software engineering, management information systems). One example could be human-computer interaction, which decades ago was more established in information science than in typical computer science programs. With the advent of media informatics as a novel branch of applied computer science this field has been successfully integrated in computer science programs.¹

Another aspect of this ambivalence is that today we have (arguably) more information science students than ever before and a reasonably strong position of the field at universities of applied science, especially at those who offer LIS programs for librarians. It might even be the case that more information science than actual library science professors teach in this context. At the same time, the situation at universities appears to be less promising: In Germany, several of the original information science departments have been closed (FU Berlin, Saarbrücken, arguably Constance as well) or will be closed in the next years (Düsseldorf). The rest is flourishing (Berlin, Hildesheim, and Regensburg). The future of information science at universities in Austria is unclear, in Switzerland there is no comparable degree program at a university.

This does certainly not mean that there is no information science research in D-A-CH, quite the opposite is the fact: There is a D-A-CH information science conference (i.e., this conference) which has recently become more international and its proceedings are published in English. There are academic societies for information science, and ties with the international com-

¹ In 2016, the German Gesellschaft für Informatik made HCI part of their general curriculum recommendations for computer science for the first time (Gesellschaft für Informatik, 2016).

munity have become stronger in the last years. In 2016 the ASIST European chapter was awarded the chapter of the year award by ASIST and it has a strong participation from German-speaking countries. Only recently, information scientists from German-speaking countries have been involved in top positions (e.g., as program co-chair) in the organization of the first ever ASIST meeting to be held in Europe (79th ASIST Annual Meeting, Copenhagen).

What is missing, is (strong) political awareness of the field and the willingness to strengthen information science. When politicians talk about the digital society, they almost certainly do not think of information science (rather of computer science or artificial intelligence).

In the past there has been that *kairos* in the aftermath of the Sputnik shock when western societies saw an urgent need to strengthen their information infrastructure which among other things led to the introduction of information science as an academic curriculum (Herner, 1984: 159). We do not have a comparable opportunity right now.²

Question 2

As mentioned above, some of the traditional topics of information science have been picked up by computer science (informatics) as well. This is obvious for HCI as well as for information retrieval (IR), one of the traditional core topics in information science. Here, it has to be admitted that computer science traditionally played a large role concerning the technical dimension of IR. With user studies and empirical work becoming more commonplace in computer science due to the larger role of human-computer interaction in media informatics, for example, the breadth of IR studies in computer science contexts has increased as well.³

2 Or do we? The strategy to fill top positions in information infrastructure institutions with scientists (professors) as demanded by the national council on science (Wissenschaftsrat) is a huge chance for information science which has so far only partially been made use of, though (due to various reasons, among them the small number of qualified and willing academic information science personnel).

3 Personal anecdote: Immediately after my Ph. D. in information science I started to work in a traditional CS institute. The (well-renowned) database professor there learned of my work in IR and virtually laughed at me, informing me about the marginal importance of IR compared with the database field. A few years later, the guy had successfully starting working in the field of search engine technology ...

Still, it can be assumed that all work that has a methodological basis in the social sciences – from scientometrics and bibliometrics to information behavior and information interaction in everyday life – will not be fully embraced by computer science and remain a stronghold of information science work. It should be seen as one of the core elements of a genuine information science identity. While this argument is driven by methodological and subject-related arguments, it does not guarantee a future strengthening of information science.

Question 3

Visibility, especially international visibility is an important aspect. Regarding this, it is a surprise how little information scientists from German-speaking countries have been present in international information science conferences and journals.⁴ Certainly there are exceptions, and if one starts to wonder why information scientists have not taken part more actively in ASIST activities, the fact that ASIST has been the national information science society of the United States until 2013 should be recalled. Things are obviously changing right now. The general trend towards internationalization has arrived quite late for information science: International networking has gained importance and is more visible.

Some parts of the information science community have been active in neighboring fields of computer science, especially in media informatics (I am speaking pro domo, of course). While this has been quite successful in the sense that several information scientists have become computer scientists or (media) informatics professors. At the same time there is a tendency to fill information science positions with computer scientists as can be observed in information infrastructure institutions. For a larger community this bidirectional exchange might be fruitful and inspiring. For a community as small as information science, influx from neighboring fields can quickly be seen and felt as dangerous.

The question arises whether information science shouldn't focus more on its unique selling propositions like information behavior, research data management, information literacy, bibliometrics, information retrieval and everything connected with information infrastructure in general.

⁴ Christian Schlögl has published some bibliometric analyses that touch this point, so there is no need to go into further detail here (cf. Schlögl, 2013).

Summing up, there are plenty of exciting research challenges for information science, which can be used for sharpening the scientific profile of a unique discipline. At the same time, its degree of institutional establishment is quite lackluster.

What is surprising in this context is the fact that the very visible and important field of libraries is even less established as an academic field while at the same time it is clearer than in the case of information science that no single replacement field exists, certainly not computer science. From this observation and a positive judgement of the importance of the LIS field for society (information literacy and behavior, dealing with the post factual, giving orientation in the digital society) I draw the conclusion that there is a rising need for this field. Unfortunately, we have not found the political lever for adequate institutional consequences from this view yet.

Addendum

Last October at the ASIST conference in Copenhagen, Hazel Hall (Edinburgh) presented a study of the actual size of the UK information professional labor market (including librarians) (Hall & Raeside, 2016). The quite impressive number of 86.000 positions in the UK was observed. I do not know of a comparable study for German speaking countries. It might be quite rewarding to produce similar data here – with results stating that there are well beyond 100.000 DACH information professionals?

2.4 Statements by Christa Womser-Hacker

Question 1

In my view information science should have an important role since it delivers the scientific basis for the information society. Many information-related issues are relevant for recent developments. Information science is a small discipline which cannot compare itself to other disciplines such as computer science. I.e. that information science cannot defend a single position. We cannot keep the borders of disciplines; we should / are forced to form coalitions.

Question 2

Information science does not have a binding and mandatory curriculum for research and teaching. On the one hand, this is positive because it opens opportunities for dynamic adaptation and openness for changes within technol-

ogy, society and human behavior. On the other hand, teaching and research approaches tend to be very individual and often appear as isolated from each other. Information science could play an important role representing the interface between the big sciences such as computer science and the Humanities.

Information science has relevant and current topics and is flexible to move into new directions. Currently, there are no topics, e.g. information retrieval, that are exclusively dealt with within information science but we should demonstrate the benefit which information science can bring in.

Question 3

Try to get to know each other better and work on overcoming heterogeneity. My perspective is to find partners at the European level. I recently experienced very intensive and excellent collaborations with colleagues from the Scandinavian countries and from Southern and South-Eastern Europe.

References

- Barth, J., K. J. Fietkiewicz, J. Gremm, S. Hartmann, A. Ilhan, A. Mainka, C. Meschede, and W. G. Stock (2017): Informational urbanism. A conceptual framework of smart cities. In: *Proceedings of the 50th Hawaii International Conference on System Sciences, January 4–7, 2017, Waikoloa Village* (pp. 2814–2823). IEEE Computer Society.
- Gesellschaft für Informatik (2016): Empfehlungen für Bachelor- und Masterprogramme im Studienfach Informatik an Hochschulen. July 2016. Gesellschaft für Informatik e.V. https://www.gi.de/fileadmin/redaktion/empfehlungen/GI-Empfehlungen_Bachelor-Master-Informatik2016.pdf <10.1.2017>
- Hall, H., and R. Raeside (2016): Mapping the UK information workforce in the library, archives, records, information management, knowledge management and related professions. In: *Proceedings of the 79th ASIS&T Annual Meeting: Creating Knowledge, Enhancing Lives through Information & Technology, Copenhagen, Denmark*.
- Henrichs, N. (2014): *Menschsein im Informationszeitalter. Informationswissenschaft mit Leidenschaft und missionarischem Eifer*. Hülsbusch.
- Herner, S. (1984): Brief history of information science. In: *Journal of the American Society for Information Science*, 35 (3), 157–163. [doi:10.1002/asi.4630350308](https://doi.org/10.1002/asi.4630350308)

- Knautz, K., and K. S. Baran (Eds.) (2016): *Facets of Facebook. Use and Users*. De Gruyter Saur.
- Kuhlen, R. (1990): Zum Stand pragmatischer Forschung in der Informationswissenschaft. In: J. Herget & R. Kuhlen (Eds.): *Pragmatische Aspekte beim Entwurf und Betrieb von Informationssystemen* (pp. 13–18). UVK.
- Linde, F., and W. G. Stock (2011): *Information Markets. A Strategic Guideline for the I-Commerce*. De Gruyter Saur.
- Rauch, W. (1978): Republik Österreich: Ergebnisse einer Delphi-Studie über den gegenwärtigen Stand und zukünftige Entwicklungen des wissenschaftlich-technischen Informations- und Dokumentationswesens in Österreich. In: W. Rauch & G. Wersig (Eds.): *Delphi Prognose in Information und Dokumentation* (pp. 115–275). Saur.
- Rauch, W. (1979): The decision Delphi. In: *Technological Forecasting and Social Change*, 15, 159–169.
- Rauch, W. (1988): *Was ist Informationswissenschaft? Akademische Antrittsvorlesung* (Grazer Universitätsreden; 32). Kienreich.
- Rauch, W. (1994): Informationsdynamik und Informationspragmatik. In: W. Rauch et al. (Eds.): *Mehrwert von Information – Professionalisierung der Informationsarbeit*. Proceedings des 4. Internationalen Symposiums für Informationswissenschaft (pp. 15–18). UVK.
- Rauch, W. (2004): Die Dynamisierung des Informationsbegriffs. In: R. Hammwöhner et al. (Eds.): *Wissen in Aktion. Der Primat der Pragmatik als Motto der Konstanzer Informationswissenschaft. Festschrift für Rainer Kuhlen* (pp. 109–117). UVK.
- Scheibe, K., K. J. Fietkiewicz, and W. G. Stock (2016): Information behavior on social live streaming services. In: *Journal of Information Science Theory and Practice*, 4 (2), 6–20.
- Schlögl, C. (2013): International visibility of European and in particular German-language publications in library and information science. In: Hans-Christoph Hohbohm (Ed.): *Informationswissenschaft zwischen virtueller Infrastruktur und materiellen Lebenswelten, Potsdam, 19th–22nd March 2013*. Proceedings of the 13th International Symposium on Information Science (ISI 2013) (pp. 50–62). Hülsbusch.
- Schumann, L., and W. G. Stock (2014): The Information Service Evaluation (ISE) model. In: *Webology*, 11 (1), Article No. 115.
- Stock, W. G. (2011): Informational cities. Analysis and construction of cities in the knowledge society. In: *Journal of the American Society for Information Science and Technology*, 62 (5), 963–986.

Stock, M., and W. G. Stock (2012): Was ist Informationswissenschaft? In: O. Petrovic et al. (Eds.): *Informationswissenschaft. Begegnungen mit Wolf Rauch* (pp. 389–407). Böhlau.

Stock, W. G., and M. Stock (2013): *Handbook of Information Science*. De Gruyter Saur.